

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|   |   |  |
|---|---|--|
| Applicant's or agent's file reference<br>GP-70672WO | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br>PCT/US01/02420     | International filing date (day/month/year)<br>24 JANUARY 2001   | (Earliest) Priority Date (day/month/year)<br>24 JANUARY 2000 |
| Applicant<br>SMITHKLINE BEECHAM CORPORATION         |   |  |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☒ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (See Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. \_\_\_\_\_

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/02420

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-2, 5-9

Remark on Protest

☐

The additional search fees were accompanied by the applicant's protest.

☐

No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/02420

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : Please See Extra Sheet.

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC.

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/183, 320.1, 252.3, 325, 419, 254.11; 536/23.1, 23.2; 530/300, 350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN search terms: human, methion?, synthetase, ligase, tRNA

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category*     | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|---------------|---|-----------------------|
| X<br>---<br>Y | Database GenBank, US National Library of Medicine, (Bethesda, MD USA), No. AA280602, NCI-CGAP. 'Homo sapiens cDNA clone IMAGE:712808 5' similar to SW:SYMM_Yeast P22438 METHIONYL-TRNA SYNTHETASE, MITOCHONDRIAL; mRNA sequence,' 02 April 1997, see entire document. | 2<br>---<br>1, 5-9    |
| A             | Database GenBank, US National Library of Medicine, (Bethesda, MD, USA), No. P56192, LAGE et al. 'Methionyl-tRNA Synthetase [human], ' 01 November 1997.   | 1-2, 5-9              |
| A             | Database GenBank, US National Library of Medicine, (Bethesda, MD, USA), No. CAB11680, MURPHY et al. 'Methionyl-tRNA synthetase, mitochondrial [Schizosaccharomyces pombe], ' 09 September 1997.   | 1-2, 5-9              |

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

|   |  |
|---|--|
| * Special categories of cited documents:  | *T* later document published after the international filing date or priority date and not in conflict with the application but used to understand the principle of the art underlying the invention  |
| *A* document defining the general state of the art which is not considered to be of particular relevance  | *X* document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone   |
| *E* earlier document published on or after the international filing date  | *Y* document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| *F* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | *G* document member of the same patent family  |
| *O* document referring to an oral disclosure, use, exhibition or other means  |  |
| *P* document published prior to the international filing date but later than the priority date claimed  |  |

Date of the actual completion of the international search

26 FEBRUARY 2001

Date of mailing of the international search report

05 JUN 2001

 Name and mailing address of the ISA/US  
 Commissioner of Patents and Trademarks  
 Box PCT  
 Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

 TERRY J. DEY  
 PARALEGAL SPECIALIST  
 KATHLEEN KERR  
 TECHNOLOGY CENTER 1600

Telephone No. (703) 308-0196

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US01/02420

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| A         | Database GenBank, US National Library of Medicine, (Bethesda, MD , USA), No. CAB51763, WOOD et al. 'Methionyl tRNA synthetase [Schizosaccharomyces pombe],' 30 July 1999.                                     | 1-2, 5-9              |
| A         | KISSELEV et al. Aminoacyl-tRNA Synthetases from higher Eukaryotes. Progress in Nucleic Acid Research and Molecular Biology. 1994, Vol. 45, pages 83-142.  | 1-2, 5-9              |
| A         | MIRANDE M. Aminoacyl-tRNA Synthetase Family from Prokaryotes and Eukaryotes: Structural Domains and Their Implications. Progress in Nucleic Acid Research and Molecular Biology. 1991, Vol. 40, pages 95-142. | 1-2, 5-9              |
| A         | LAGE et al. Cloning of a human cDNA encoding a protein with high homology to yeast methionyl-tRNA synthetase. Gene. October 1996, Vol. 178, pages 187-189.  | 1-2, 5-9              |

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/02420

## A. CLASSIFICATION OF SUBJECT MATTER:

IPC (7):

C12N 9/00, 15/63, 15/70, 15/74, 1/20, 5/00, 5/02, 5/04, 5/10, 1/14, 1/16, 1/18; C07H 21/02, 21/04; C07K 2/00, 1/00

## A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

435/183, 320.1, 252.3, 325, 419, 254.11; 536/23.1, 23.2; 530/300, 350

## BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s) 1-2 and 5-9, drawn to polypeptides, polynucleotides, vectors, process of producing host cells, host cells, membranes of host cells, and processes of producing a polypeptide.

Group II, claim(s) 3 and 4, drawn to antibodies.

The inventions listed as Groups I and II do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more special technical features, which is defined as technical features that define a contribution which each of the inventions, considered, as a whole, makes over the prior art. While the inventions of Groups I and II both relate to the full length polypeptide of Claim 1, the inventions of Group II need not share this special technical feature since antibodies are specific for small portions or fragments of proteins, which small portions or fragments do not make a technical contribution over the prior art.

**Notice of References Cited**Application No.  
09/489,650Applicant(s)  
Hayes et al.Examiner  
Kathleen KerrGroup Art Unit  
1652

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**U.S. PATENT DOCUMENTS**

|   | DOCUMENT NO. | DATE | NAME | CLASS | SUBCLASS |
|---|--------------|------|------|-------|----------|
| A |              |      |      |       |          |
| B |              |      |      |       |          |
| C |              |      |      |       |          |
| D |              |      |      |       |          |
| E |              |      |      |       |          |
| F |              |      |      |       |          |
| G |              |      |      |       |          |
| H |              |      |      |       |          |
| I |              |      |      |       |          |
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| M |              |      |      |       |          |

**FOREIGN PATENT DOCUMENTS**

|   | DOCUMENT NO. | DATE | COUNTRY | NAME | CLASS | SUBCLASS |
|---|--------------|------|---------|------|-------|----------|
| N |              |      |         |      |       |          |
| O |              |      |         |      |       |          |
| P |              |      |         |      |       |          |
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| R |              |      |         |      |       |          |
| S |              |      |         |      |       |          |
| T |              |      |         |      |       |          |

**NON-PATENT DOCUMENTS**

|   | DOCUMENT (Including Author, Title, Source, and Pertinent Pages)  | DATE    |
|---|--|---------|
| U | GenBank Accession Number P56192 (1997).  | 11/1997 |
| V | GenBank Accession Number CAB11680 (1997).  | 9/1997  |
| W | Mirande M, Aminoacyl-tRNA synthetase family from prokaryotes and eukaryotes: structural domains and their implications. Prog. Nucleic Acid Res. Mol. Biol. (1991) 40:95-142. | 1991    |
| X | Kisselev et al. Aminoacyl-tRNA synthetases from higher eukaryotes. Prog. Nucleic Acid Res. Mol. Biol. (1994) 48:83-142.  | 1994    |

**Notice of References Cited**Application No.  
09/489,650Applicant(s)  
Hayes et al.Examiner  
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**U.S. PATENT DOCUMENTS**

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| A |              |      |      |       |          |
| B |              |      |      |       |          |
| C |              |      |      |       |          |
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| M |              |      |      |       |          |

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**NON-PATENT DOCUMENTS**

|   | DOCUMENT (Including Author, Title, Source, and Pertinent Pages)  | DATE    |
|---|--|---------|
| U | Lage et al. Cloning of a human cDNA encoding a protein with high homology to yeast methionyl-tRNA synthetase. Gene (1996) 178:187-189. | 10/1996 |
| V | GenBank Accession Number SYBYMT (1985).  | 5/1985  |
| W |  |         |
| X |  |         |